What is claimed is:

1. Biologically active flt3-ligand (flt3-L) as a homogeneous protein.
2. The biologically active flt3 -L according to claim 1, wherein the ligand is human flt3-L.
3. The biologically active flt3 -L according to claim 1, wherein the ligand is murine flt3-L.
4. The biologically active flt3 -L according to claim 1, having the amino acid sequence 1 - 235 of SEQ ID NO:6.
5. The biologically active flt3 -L according to claim 1, having the amino acid sequence 1 - 231 of SEQ ID NO:2.
6. The biologically active flt3-L according to claim 1, wherein the ligand is a soluble flt3-L.
7. The biologically active soluble flt3-L according to claim 6, having the amino acid sequence 28-182 of SEQ ID NO:6.
8. The biologically active soluble flt3-L according to claim 6, having the amino acid sequence 28-188 of SEQ ID NO:2.
9. The biologically active soluble flt3-L according to claim 6, having the amino acid sequence 28-160 of SEQ ID NO:6.
10. The biologically active soluble flt3-L according to claim 6, having the amino acid sequence 28-163 of SEQ ID NO:2.
11. A biologically active flt3-L encoded by the cDNA insert of vector sfHAVEO410 in *E. coli* DH10B cells having accession number ATCC 69286.
12. A biologically active flt3-L encoded by the cDNA insert of vector sfHAVEO410 in *E. coli* DH10B cells having accession number ATCC 69382.
13. An isolated DNA sequence encoding a biologically active flt3-L.
14. The isolated DNA sequence according to claim 13, encoding a biologically active human flt3-L.
15. The isolated DNA sequence according to claim 13, encoding a biologically active murine flt3-L.
16. The isolated DNA according to claim 13, having the nucleotide sequence of SEQ ID NO:1.

17. The isolated DNA according to claim 13, having the nucleotide sequence of SEQ ID NO:5.

18. The isolated DNA sequence according to claim 13, which encodes a biologically active flt3-L having the amino acid sequence 28 - 182 of SEQ ID NO:6.

19. The isolated DNA sequence according to claim 13, which encodes a biologically active flt3-L having the amino acid sequence 28 - 188 of SEQ ID NO:2.

20. The isolated DNA sequence according to claim 13, which encodes a biologically active flt3-L having the amino acid sequence 28 - 160 of SEQ ID NO:6.

21. The isolated DNA sequence according to claim 13, which encodes a biologically active flt3-L having the amino acid sequence 28 - 163 of SEQ ID NO:2.

22. The DNA according to claim 13, wherein the DNA is selected from the group consisting of:

a) cDNA derived from the coding region of a flt3-ligand gene;

b) DNA sequences which hybridize under moderately stringent conditions to the cDNA of (a), and which DNA sequences encode a biologically active flt3-ligand;

c) DNA sequences, which due to the degeneracy of the genetic code, also encode a biologically active flt3-ligand.

23. The cDNA insert of vector sfHAVEO410 in *E. coli* DH10B cells having accession number ATCC 69286.

24. An expression vector comprising the DNA sequence according to claim 13.

25. An expression vector comprising the DNA sequence according to claim 14.

26. An expression vector comprising the DNA sequence according to claim 15.

27. An expression vector comprising the DNA sequence according to claim 16.

28. An expression vector comprising the DNA sequence according to claim 17.

29. An expression vector comprising the DNA sequence according to claim 18.

30. An expression vector comprising the DNA sequence according to claim 19.

31. An expression vector comprising the DNA sequence according to claim 20.

32. An expression vector comprising the DNA sequence according to claim 21.

33. An expression vector comprising the DNA sequence according to claim 22.

34. A host cell transfected or transformed with the expression vector according to claim 24.

35. A host cell transformed or transfected with the expression vector according to claim 25.

36. A host cell transformed or transfected with the expression vector according to claim 26.

37. A host cell transformed or transfected with the expression vector according to claim 27.

38. A host cell transformed or transfected with the expression vector according to claim 28.

39. A host cell transformed or transfected with the expression vector according to claim 29.

40. A host cell transformed or transfected with the expression vector according to claim 30.

41. A host cell transformed or transfected with the expression vector according to claim 31.

42. A host cell transformed or transfected with the expression vector according to claim 32.

43. A host cell transformed or transfected with the expression vector according to claim 33.

44. An antibody which is immunoreactive with flt3-L or a flt3-L immunogen.

1806 45. The antibody according to claim 35 wherein said antibody is a monoclonal antibody.

46. An antisense oligonucleotide which hybridizes with a mRNA or a DNA encoding biologically active flt3-L which oligonucleotide is capable of inhibiting the expression of the flt3-L.

47. A fusion protein comprising a flt3-L and a Fc region of a human immunoglobulin.

48. A fusion protein comprising a flt3 and a Fc region of a human immunoglobulin.

49. A pharmaceutical composition comprising an effective amount of flt3-L and IL-7 and a pharmaceutically acceptable carrier.

50. The composition according to claim 49, wherein the flt3-L comprises the sequence of amino acids 28-182 of SEQ ID NO: 6.

51. The composition according to claim 49, wherein the flt3-L comprises the sequence of amino acids 28-188 of SEQ ID NO: 2.

52. The composition according to claim 49, wherein the flt3-L comprises the sequence of amino acids 28-160 of SEQ ID NO: 6.

53. The composition according to claim 49, wherein the flt3-L comprises the sequence of amino acids 28-163 of SEQ ID NO: 2.

54. A pharmaceutical composition comprising an effective amount of flt3-L and IL-3 and a pharmaceutically acceptable carrier.

55. The composition according to claim 54, wherein the flt3-L comprises the sequence of amino acids 28-182 of SEQ ID NO: 6.

56. The composition according to claim 54, wherein the flt3-L comprises the sequence of amino acids 28-188 of SEQ ID NO: 2.

57. The composition according to claim 54, wherein the flt3-L comprises the sequence of amino acids 28-160 of SEQ ID NO: 6.

58. The composition according to claim 54, wherein the flt3-L comprises the sequence of amino acids 28-163 of SEQ ID NO: 2.

59. A method for conducting autologous transplantation in a patient receiving cytoreductive therapy, comprising:

(a) removing hematopoietic progenitor cells or stem cells from the patient prior to cytoreductive therapy;

(b) expanding the hematopoietic progenitor cells or stem cells *ex vivo* with flt3-ligand alone or in combination with at least one growth factor selected from the group consisting of an interleukin, a colony-stimulating factor and a cytokine, and combinations thereof, to provide a cellular preparation comprising an expanded population of such hematopoietic cells; and

(c) administering the cellular preparation to the patient following cytoreductive therapy.

60. A method according to claim 59, wherein the growth factor is selected from the group consisting of SF, G-CSF, EPO, IL-1, IL-3, IL-6, IL-7, IL-11, IL-12, IL-15, GM-CSF, and GM-CSF/IL-3 fusion proteins.

61. A method according to claim 59, further comprising a preliminary *in vivo* procedure comprising administering flt3-L and an additional recruitment growth factor to the patient to recruit the hematopoietic cells into peripheral blood prior to their harvest, wherein the additional recruitment growth factor is selected from the group consisting of GM-CSF, SF, G-CSF, EPO, IL-3, IL-6, IL-7, IL-11, IL-12, IL-15, GM-CSF/IL-3 fusion proteins, and combinations thereof.

62. A method according to claim 59, further comprising a subsequent *in vivo* procedure comprising administering flt3-L and an engraftment growth factor to the patient following transplantation of the cellular preparation to facilitate engraftment and augment proliferation of engrafted hematopoietic progenitor or stem cells from the cellular preparation, wherein the engraftment growth factor is selected from the group consisting of GM-CSF, G-CSF, EPO, IL-3, IL-6, IL-7, IL-11, IL-12, IL-15, SF, GM-CSF/IL-3 fusion proteins and combinations thereof.

63. A hematopoietic cell expansion media comprising cell growth media, flt3-L and a growth factor selected from the group consisting of SF, G-CSF, EPO, IL-1, IL-3, IL-6, IL-7, IL-11, IL-12, IL-15, GM-CSF, GM-CSF/IL-3 fusion proteins, and combinations thereof.

64. A method of claim 63, wherein the hematopoietic cells are human stem cells.

65. A method of claim 63, wherein the hematopoietic cells are human progenitor cells.

66. A method of transfecting a gene into an early hematopoietic cell comprising the steps of:

(a) culturing the early hematopoietic cells in media comprising flt3-L and a growth factor selected from the group consisting of SF, G-CSF, EPO, IL-1, IL-3, IL-6, IL-7, IL-11, IL-12, IL-15, GM-CSF, GM-CSF/IL-3 fusion proteins, and combinations thereof; and

(b) transfecting the cultured cells from step (a) with the gene.

67. A method of transferring a gene to a mammal comprising the steps of:

(a) culturing early hematopoietic cells in media comprising flt3-L and a growth factor selected from the group consisting of SF, G-CSF, EPO, IL-1, IL-3, IL-6, IL-7, IL-11, IL-12, IL-15, GM-CSF, GM-CSF/IL-3 fusion proteins, and combinations thereof ;

(b) transfecting the cultured cells from step (a) with the gene; and

(c) administering the transfected cells to the mammal.